

# Historical Development of Housing Plans

## 1. High-density low-rise

In the following we use "high-density low-rise" to designate one- to three-story structures built in rows or other groups. One may define row houses as a succession of dwellings in linear, staggered, or other form of addition – usually along a street. By grouping, introverted patio houses can also similarly produce a flat-configured structure.

The following distinctions are possible in the typology of the patio house: angular, semi-atrium, full-atrium, multiple-patio, and raised-block types. These forms progressively increase in exterior-wall surface, in conjunction with a decrease in cost effectiveness – but with increasing spatial benefits (1). In other words: those who can afford it may use the patio as a place to work or rest or engage in social interaction, with privacy and with protection from noise, dust, and heat. The cost-effective row house cannot offer these benefits. Of generally four outside walls, it has two (usually the longest) in common with its neighbors, and its yard is contiguous at three sides with at least three neighbors. The row house, nevertheless, is currently one of the most popular forms of housing for middle-income classes. Proponents list as its chief attractions the economical costs of building and heating, as well as the modest size of the yard, manageable even for city people.

## 1850-1918: Urban misery and company-built housing developments

The historical development of row houses in Europe may be studied as a phenomenon closely connected with the growth of company-built workers' housing developments. Employers always welcomed the possibility for their workers to live near the factory. And the small gardens could serve as important sources of vegetables in times of need. It is noteworthy that such standpoints did not exist in socialistic societies: their ideology dictated that the worker not possess private property.

In the middle of the nineteenth century, conditions in Europe were not propitious within cities for building company-sponsored developments with gardens. In London, with its low-rise tenements, the construction boom initiated by industrialization was less the result of planning than of exploitation: i.e., in the form of dense, low-level housing. In addition to London, many other cities were bleak, monotonous, crowded and chaotic, dirty and unhygienic. As detailed in the famous book published by Friedrich Engels, "Condition of the Working Class in England" (written in 1848), entire street sections of Manchester were newly constructed with back-to-back types, in small and dirty courtyards. These types adjoined other dwellings on three sides, and were exposed to light on only one building side. The majority of the rooms were subsequently not open to natural light.

During this period, not all entrepreneurs were exploitative; some, indeed had read Jean-Jacques Rousseau (1712-1778) and had heard about social reformers such as Charles Fourier (1772-1837) and Robert Owen (1771-1858). Many, indeed, lived either in fear of socialistic strikes, or were inspired by philanthropic motives. In England, such entrepreneurs were known as paternalists. Under the critically compelling circumstances of the time in London, a number of these businessmen made the decision to move their factories into the countryside and to erect industrial villages for their workers there. James S. Buckingham initiated this movement in 1849. Between 1850 and 1863, Titus Salt, a manufacturer of alpaca wool, built a rectangular, dense housing development in the open countryside which featured such facilities for the residents as a school, church, hospital, park, and train station. Salt situated his factory to the northeast of the development, under consideration of the prevailing west wind and the pollutants emitted (2). The dwellings built in Saltaire – as the development was named – were two-story row houses in Renaissance style. Three-story corner houses were reserved for the larger families. In 1879, the chocolate producer George Cadbury followed suit and built Bournville estates, near Birmingham. Social generosity marked this development: curving streets, larger plots with row houses and duplexes, and a parklike strip down the middle (3, 4). Additional paternalist estates followed in the 1870s, including Port Sunlight built by the soap magnate William Hesketh Lever and the Margarethenhöhe Siedlung by the steel manufacturer Alfred Krupp. Margarethenhöhe, built in 1906, displayed remarkably modern plans for four-room houses with large kitchens (5). Ebenezer Howard, profoundly impressed by these developments, followed by founding the first garden city company. In 1908, the architects Unwin and Parker built the garden city of Letchworth for Howard, in medieval style. The row and linked houses erected there had relatively broad and shallow plans (6, 7).

Although some architects enthusiastically espoused Howard's approach, they planned garden communities as extensions to existing cities. The architects Riemerschmid, Muthesius, and Tessenow built Hellerau Garden City in 1906 near Dresden, for workers and the lower middle class. Heinrich Tessenow recognized the economic importance of type standardization and designed row houses, executed in half-timbered style with widths of 5.40 m. These houses had three rooms, an eat-in kitchen, toilet, and added-on facilities for animals and laundry (8).

## 1918-1945: "Building Economically"

Early in this century, Peter Behrens and H. de Fries published an influential essay called "Building Economically" (Berlin, 1918) in which they advocated grouped configurations and back-to-back types in order to reduce property costs. In Vienna, Adolf Loos worked with a row-house type economical by virtue of its structural design. He named his design "the house with one wall" and patented it (9, 10). Only the firewalls consisted of masonry material, each of which supported the ceiling beams of two adjacent neighbors. The house fronts facing the street and the yard consisted of wooden walls. This house type was relatively broad. Jakobus Pieter Oud was the first architect to consistently minimize house width, down to 4.20 m. With his extremely reduced corridor space, he achieved a two-story row-house with a half-turn staircase, but without bathroom: as realized in Kiefhoek in 1925 (11). Bruno Taut was somewhat more generous with his spaces. In his development in Britz, built in Berlin in 1925, the rooms are larger than we expect today –



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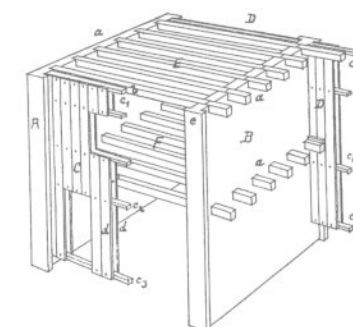
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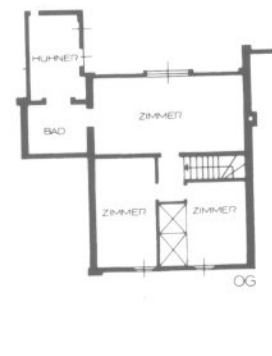
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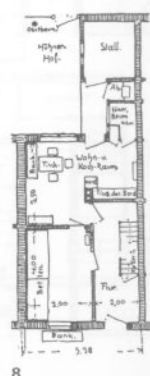
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1 Typological symbols for high-densifying low-rise constructions/Typologische Symbole zur flächigen Verdichtung

2 Lockwood & Mawson: Site plan/Lageplan Saltaire, 1851

3 Alex Harvey: Site plan/Lageplan Bournville, Birmingham, Stand 1911

4 Duplex house/Doppelhaus, Bournville, 1911

5 Row house/Reihenhaus Margarethenhöhe, Essen, 1906

6 Unwin & Parker: Site plan/Lageplan Garden City/Gartenstadt Letchworth, 1908

7 Unwin & Parker: Row houses/Reihenhäuser Letchworth, 1908

8 Heinrich Tessenow: Row house/Reihenhaus, Garden city/Gartenstadt Hellerau, 1906

9/10 Adolf Loos: "Das Haus mit einer Mauer" ("House with One Wall"), Patent 1920

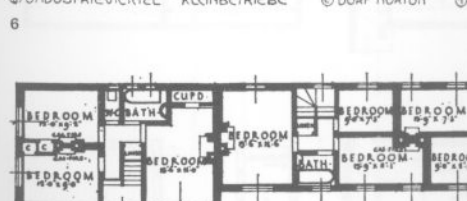
11 J. P. Oud: Row house/Reihenhaus, Kiefhoek, 1925

12 Bruno Taut: Row house/Reihenhaus, Berlin-Britz, 1925

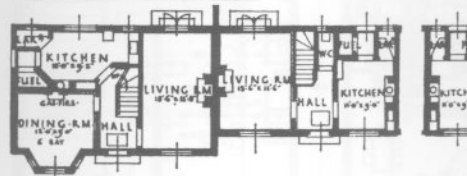
## GARTENSTADT LETCHWORTH • BEBAUUNG



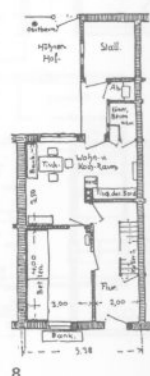
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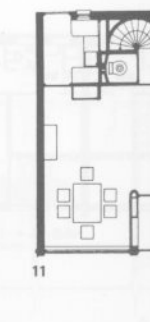
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with living/dining room of 24 m<sup>2</sup>, kitchen 10 m<sup>2</sup>, and parents' bedroom 20 m<sup>2</sup>. The houses also contained a bathroom with tub and toilet (12). Exemplary for all architects involved during those years in low-rise construction, however, was the development realized by Oud in Hoek van Holland in 1924. Oud built series of two apartments, arranged one above the other, with different sizes and separate entrances (13). Between 1922 and 1925 Victor Bourgois enriched row-house construction by building units configured in saw-tooth-fashion, at 45 degrees to an east-west oriented street in Cité Moderne in Brussels (14).

In the middle of the 1920s, Ernst May began work as a department manager in the Building Authority for the City of Frankfurt am Main. May, who had worked as a young man for Unwin and Parker in the planning of Hampstead Garden City, began his work by immediately planning prefabricated housing developments on the periphery of the city. May principally implemented a sequence of two- and three-story dwellings well adapted to their surrounding topography. In addition to prefabricated components, he realized additional cost-effective ideas such as standardized built-in kitchens; built-in cabinets; flat roofs which could be walked on; as well as standardized furnaces, doors, and door and window frames. His plan types (5 to 5.15 m wide) differed by virtue of their stairways oriented either laterally or longitudinally to the house axis (15).

## Building exhibitions

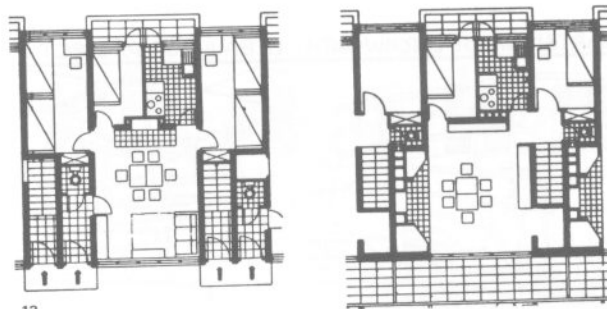
On the initiative of the Deutscher Werkbund, the Weissenhofsiedlung was built in 1927 in Stuttgart according to the urban design by Ludwig Mies van der Rohe. Contrary to the Stuttgart tradition in building – with the gables of houses perpendicular to the ground slope – van der Rohe oriented his houses parallel to the contour lines, much as had been practiced in Frankfurt housing developments. Mart Stam formulated the maxim of planning here: houses as objects of daily use, and not as status symbols. The most interesting contribution made to low-rise construction came again from Jakobus Pieter Oud: a deep house with 4 or 5 rooms, on three levels. Special features of his design were the toilet separated from the interior bathroom, a walled-in courtyard accessed from the parallel street, and a laundry-drying room on the level of the staircase landing (16).

Two years later, Walter Gropius won first prize in the competition and built the Dammerstock Siedlung in Karlsruhe, Germany. Unlike the Stuttgart and Frankfurt developments, the simplicity of parallel north-to-south rows prevailed here: defended by Gropius as part of his principle of "efficient construction-site organization." He reserved 22 % of property area as outdoor public space, and he was able to realize each dwelling unit on only 149 m<sup>2</sup> of the plot area. Of the 671 units built here, around half were in the form of row houses. For the Bauhaussiedlung in Dessau-Törten, Germany, Walter Gropius and Hannes Meyer developed a split-level type in 1926. Living space was on ground level, and bedrooms were a half-story over the semi-basement: a special form of a floor plan with room clusters (17). For the Dammerstock Siedlung, on the other hand, Gropius contributed a row-house type 5.60 m wide, with perpendicular-oriented stairway in the middle (18). One of the prize-winners, Alfred Fischer, expanded the scanty plot area by adding a flat roof which could be walked on, and designed a plan featuring the living room as center: a predecessor to Alvar Aalto's Interbau contribution.

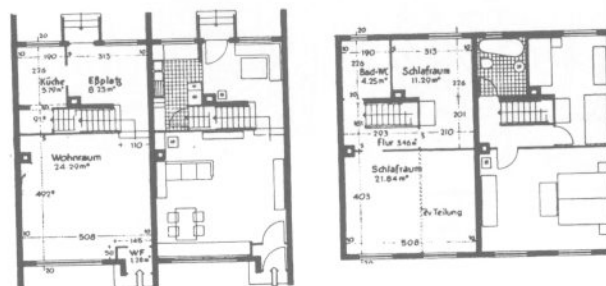
For designing the more picturesque Vienna Werkbund Siedlung in 1932, the organizers invited in addition to Austrian architects one Dutch, one French, and one German architect: Hugo Häring. Häring had become known over decades for his work with row-house types and small-house plans. In his Vienna row houses, Häring pioneered two ideas of our time: flexibility and passive solar energy. His different-sized houses are oriented with their broad sides facing the south, toward the yard or the residents' path. The broad side consisted of wood and glass, and the other three walls were made of masonry with small openings. Logically, the entrance, living rooms, and bedrooms were situated on the fully glazed garden side, with the sanitary rooms and the storage room toward the north. Sliding doors between the living room and one bedroom offered certain flexibility of use (19). In his Werkbund Siedlung, Adolf Loos took the opportunity of realizing his Raumplan concept in the form of a three-story row house. A two-story living room is bordered on two sides by a gallery, with built-in sofa (20).

## Third Reich and war

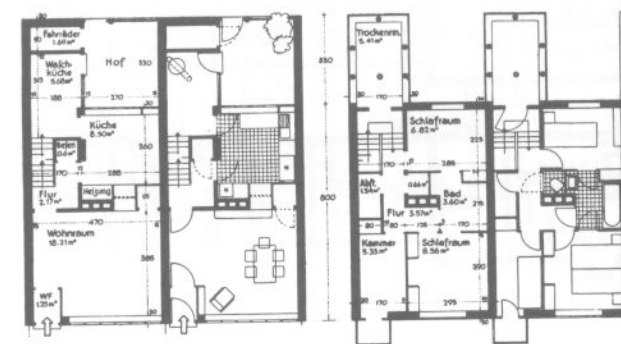
During the era of National Socialist architecture, between 1933 and 1939, low-rise housing was structured according to new standpoints: linked houses and duplexes enjoyed priority over row houses. Symmetry became essential. Steep roofs and windows with glazing bars were meant to signal affinity with the earth and the landscape. Eat-in kitchens displaced kitchens meant only for cooking. As the war progressed, construction of new housing gradually ceased, and bombing opened other fields of activities. During these years, a noteworthy housing development took form outside the sphere of Nazi power: one whose plan type has exerted considerable influence until today. In 1936 Alvar Aalto began work on the residential project built by the Sunila paper company for its workers, only completed in 1954. The site plan shows housing groups on the south slopes, with traffic arteries and gardens in the valleys. The dwellings included three-story house units arranged in rows on the slopes. Each unit contained two half-basement one-room apartments with access from the lower-lying south sides, two 2-room apartments in the middle, reached from the north side, as well as two upper 2-room apartments accessed from stairways likewise on the north side (21, 22). In other words: three row houses stacked on top of each other, with slight terraced staggering and with loadbearing crosswalls. In accordance with the times, the apartments were small. It could not have been economic considerations which prompted the architect to provide most of the apartments with their own entrances. The motivation, instead, was sociological: privacy, despite the block configuration, was important to the architect. Over the course of time, this attitude found proponents among English and, later, German architects.



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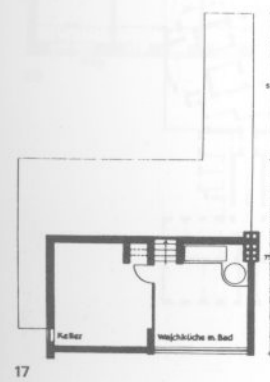
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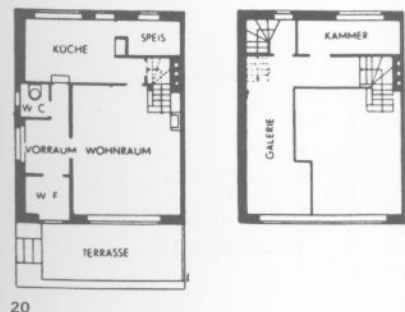
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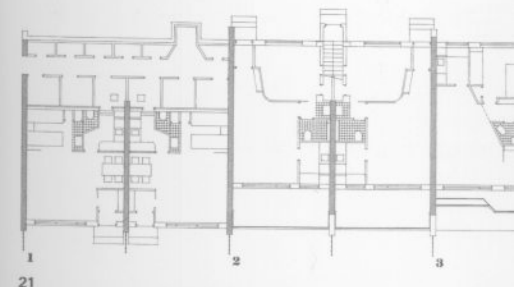
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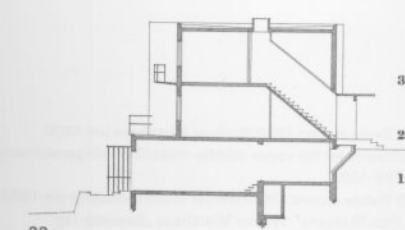
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13 J. P. Oud: Stacked living units/Gestapelte Wohneinheiten, Hoek van Holland, 1924  
14 Victor Bourgois: Cité Moderne, Brussels/Brüssel, 1922-1925  
15 Ernst May: Praunheim, 1926  
16 J. P. Oud: Row house/Reihenhaus, Weißenhofsiedlung, Stuttgart, 1927  
17 Walter Gropius, Hannes Meyer: Row house, Reihenhaus, Dessau-Törten, 1926  
18 Walter Gropius: Row house/Reihenhaus, Dammerstock, Karlsruhe, 1929  
19 Hugo Häring: Row house/Reihenhaus, Werkbundsiedlung, Vienna/Wien, 1932  
20 Adolf Loos: Row house/Reihenhaus, Werkbundsiedlung, Vienna/Wien, 1932  
21/22 Alvar Aalto: Worker's houses for Sunila paper company/Werksiedlung  
Papierfabrik Sunila, Kotka, Finland, 1936-1954



## 2. Multi-story housing

Cost-effective utilization of the expensive property in cities led to widespread construction of apartment buildings. This led to likewise cost-effective common access to the individual apartments. Apartment buildings are constructed either with parallel load-bearing middle walls, crosswalls, or – at more expense – column systems. The structural design has essential influence on the apartment plan: middle walls are logically associated with plan solutions featuring corridors, and crosswalls are used in conjunction with room-cluster floor plans.

### 1805-1933: Period of critical housing shortage

In European cities, the nineteenth century represented the period of greatest overcrowding and worst housing conditions. The housing plans of this time reflected changing social structures. On the one hand, industrialization and migration from the countryside into the cities produced the proletariat; the same conditions, on the other, gave rise to a wealthy upper class. The less articulate middle class lived closed off from both. Each of these classes of society, in turn, occupied housing characteristic of its needs and resources. In Berlin, the first building code went into effect in 1853 and remained in force until 1887. The purpose of these regulations – along with the paving of streets, the supply of drinking water, and the installation of a sewage system – was to bring some order into the chaotic growth of the city. According to these new regulations, not more than 1.5 to 3 persons were authorized to live in a room from 15 to 30 m<sup>2</sup> in size. The concept of a dwelling unit had not yet been defined as a separate entity. The kitchen, for example, was often separated from the rooms it served by a corridor which provided access to several dwelling units. An elevator was not required for buildings up to seven stories. The size of courtyards depended on the range of the spray from fire-department hoses.

### The apartments of the bourgeoisie

Among the bourgeoisie of this era, the urge to make an imposing impression was more important than an economic apartment plan. The living rooms faced the street. Since at least one servant was employed in each household, there was no need for floor plans which assured efficient functional relationships. Long and meandering corridors, led to distant bedrooms often facing the courtyard (23).

Toward the end of the nineteenth century, the middle class flourished, accompanied by a decrease in construction of large apartments and in preponderance of medium-sized dwellings. Front and rear buildings were built on each plot to maximize exploitation of the land. In Berlin and other cities, the apartment buildings with wings extending along each side of the courtyards created so-called Berliner Zimmer (Berlin Rooms) situated in the poorly-lit corners. These rooms frequently served as thoroughfares to bedrooms facing the courtyard. The living rooms of the higher-class apartments showed to the street. The rear house was reserved for apartments of less affluent tenants. Courtyards and light wells broke up the structure of these inner-block buildings, plan and design of these voids having a significant effect on the quality of the apartments.

Eminently typical were apartment-housing blocks with central-corridor plan as developed in Vienna. A central corridor afforded access to all rooms. The great block depth (approx. 12 m) of these apartment buildings – as well as new building codes reflecting advances in hygiene – determined the location of these corridors. Neutral access to the rooms furthermore allowed subtenants or several families to live together – an essential factor in times of critical housing need. Bathrooms, installed at the beginning of the twentieth century, were located next to kitchens to enable concentration of water lines.

A general improvement in housing construction became apparent during the early years of the new century. In Berlin, Bruno Taut and Hermann Muthesius began to implement early programmatic social housing ideas. Throughout Europe, architects designed and realized new concepts for the upper-middle-class apartment: Hector Guimard in Paris, Otto Wagner in Vienna, Antoni Gaudí in Barcelona, and Victor Horta in Brussels (24).

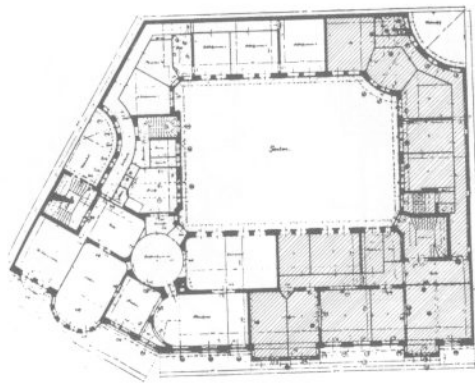
### The proletariat apartment

In 1827, a census in Berlin revealed that 496 families in the vicinity of Hamburger Tor were housed in 400 rooms: of which 25 % were subdivided by chalk lines drawn on the floor. Around the middle of the nineteenth century, the proletariat made up around 88 % of the total population in Berlin. These members of the lowest class lived under dreadful conditions. Even by 1875, 8.4 % of the Berlin population had only "sleeping places": they could only rent beds in other tenants' apartments. By 1890, the midtown districts of Berlin were so densely packed with tenement buildings that developers began with the construction of housing developments on the outskirts of the city.

The situation was little different in Vienna and London. The building code of the City of Vienna allowed 85 % of the area of a plot area to be covered by buildings (25). For the masses, "Bassenhäuser" were built: buildings named after the water basins set up in each corridor for the common use of all tenants. One- and two-room apartments opened onto common corridors, with a kitchen as anteroom. Communal toilets were situated directly on this thoroughfare (26). It was not until the end of the nineteenth century that conditions also gradually improved for working-class apartments.

### New ideas

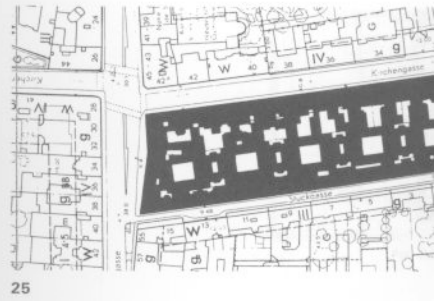
If one considers the multitude of projects carried out in the 1920s, the majority of housing-plan ideas were already developed by then. Reconstruction in Germany was not able to commence immediately after the end of the First World War: a situation positive for development of new housing concepts. A considerable number of architects were active



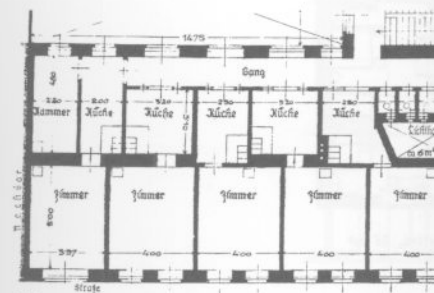
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- 23 Apartment block in Berlin around 1900/Berliner Mietshaus um 1900  
 24 Otto Wagner: Apartments for the upper-middle-class/Großbürgerwohnungen, Linke Wienzeile, 1898-1899  
 25 Apartment block in Vienna around 1900/Wiener Wohnbebauung um 1900  
 26 Viennese housing type "Bassena"/Wiener Mietshaus „Bassena-Typ“

## Cluster plans

Klein's types provided the basis for a great variety of further developments, especially for the cluster floor plan, even in a period in which municipal building codes stipulated the dimensions of apartment rooms. Klein worked from the principal standpoint of offering functional, non-prestigious apartment plans for families without servants. Klein's approach also allowed him to prepare a comprehensive study, with diagrams as tools, on apartment exposition to natural light.

open-air gallery also have maisonettes, likewise accessed by open-air galleries. In his late housing developments, Walter Gropius also worked on the basis of the cluster floor plan (30). In his Frankfurt Project of 1931, he further developed it to a classical plan which until today has been widely emulated. He combined the central corridor and the anteroom to form an L-shaped corridor. The result was an economical, deeper construction which Gropius finally applied in 1957 for his Interbau contribution. Here, he mechanistically lined up rooms with various functions down a long, narrow central corridor.

In 1930 Hans Scharoun designed a wonderful apartment plan, wonderful because it was modelled on life. He created a continuous living room exposed to natural light on two sides, with loggia and dining corner with flower window as passage space to the anteroom of the bedroom group. Here we have the case of an organically conceived apartment plan (31).

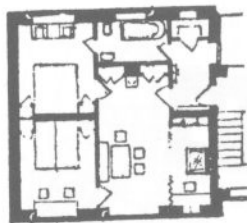
## Cabin plans

### Cabin plans

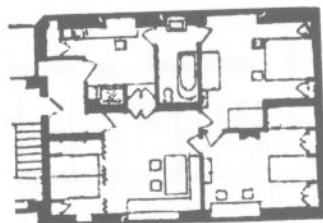
A number of Alexander Klein's contemporaries worked at the same time on developing apartment plans. Minimization of corridor space was an important point. Adolf Rading, better known for his Century Hall in Breslau, presented a cabin plan for ground-level apartments in 1920. His solution proposed a construction approx. 7 m deep, with the living room in the middle. On three sides, the living room is enclosed by three cabin bunks, each with two beds and built-in cabinets; the kitchen; an ante-space with basement stairs; an anteroom to the bathroom; and an exit to the garden. This attachment of bunk space had been earlier known in Low-German farmhouses as "Butze" or "Durk" – although they were only bed niches in the wall there. Ludwig Hilberseimer, who presented a cabin-plan design in the same year for a multi-family house, took as model the efficient use of space in passenger cabins on ocean liners (32). Some years later Otto Haessler accepted Hilberseimer's almost literally. The economic advantages of the cabin plan were possible only at the price of sole access through the living room (33).

## Flexible plans

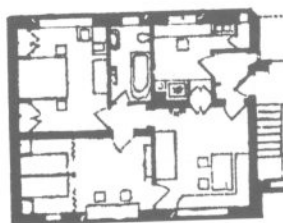
**Flexible plans** “Man and his dwellings are capable of transformation: flexible, and yet permanent.” Bruno Taut wrote these words in 1920 in his book “Die Auflösung der Städte oder die Erde eine gute Wohnung” (The Dissolution of Cities: Or, the Earth as Good Dwelling). Taut himself, to be sure, did not manage to realize a flexible apartment. Ludwig Mies van der Rohe did, however, succeed in realizing his earlier-published ideas involving apartments with steel-skeleton constructions, allowing movable walls between loadbearing columns. His contribution to the Weissenhofsiedlung in Stuttgart was a flexible apartment plan, within the context of unchanging constructional constraints. The solution enabled 4, 5, or 6 persons to be housed in the same living area. Van der Rohe applied ideas from the cabin plan in generous fashion here (34). Seven years later, Eric Friberger realized his epochal creation in Göteborg-Kallebeek: building levels as invariable concrete-slab construction, into which apartments could be installed according to tenant needs and wishes. The stairwell, the water unit on the inner wall of the stairwell, and the columns are the fixed elements allowing the builder to proceed as he wishes (see page 31).



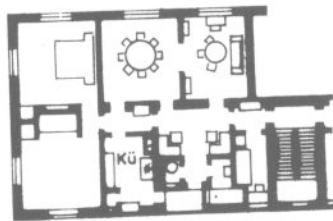
Bohntyp I: Vier Betten, 43,6 m<sup>2</sup>



Wohnung II: Acht Betten, 64 m<sup>2</sup>



Wohnung III: Fünf Betten, 55 m<sup>2</sup>



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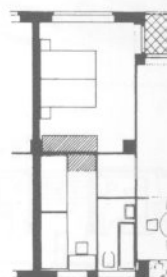


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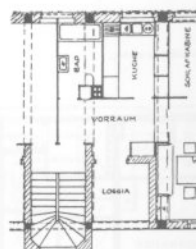
- 27 Alexander Klein: Minimal housing units for Moscow Competition/Kleinwohnungen für Moskauer Wettbewerb, 1925
- 28 Alexander Klein: Competition entry for/Beitrag zu Wettbewerb Tempelhofer Feld AG Berlin, 1925
- 29 Alexander Klein: „Raumgruppengrundriß“ (\"Cluster floor plan\"), exhibition/Ausstellung „Heim+Technik“, Munich/München, 1923
- 30 Walter Gropius: Design for an apartment block/Entwurf für ein Mehrfamilienhaus, 1930
- 31 Hans Scharoun: Housing complex/Wohnanlage Berlin-Jungfernheide, 1930
- 32 Ludwig Hilberseimer: Design for an apartment block/Entwurf für ein Mehrfamilienhaus, 1920
- 33 Otto Haesler: Cabin plan/Kabinengrundriß, Kassel, 1930
- 34 Mies van der Rohe: Apartment building with flexible floor plans/Mehrfamilienhaus mit flexiblen Grundrissen, Weißenhofsiedlung, Stuttgart, 1927



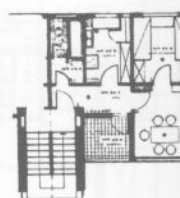
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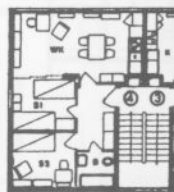
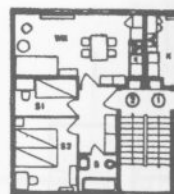
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### Application and acceptance

The types of plans summarized above were realized in large-scale housing developments, beginning in the mid-1920s. This was for example the case in Berlin, in which 187,456 dwelling units were built between 1925 and 1934. One of the earliest large developments was in Britz, in Berlin, and was named Hufeisensiedlung (Horseshoe Housing Development) after the shape of its central building. This large circular form enclosed a courtyard which was divided into tenants' gardens: unlike Vienna, where such space was open for use by all. This central area is surrounded by rows of dwellings in many and various staggered and angled configurations (35). Built not long after was the development "Onkel Toms Hütte," based on an urban plan also designed by Taut. The challenges of large-scale construction programs were met by use of simple forms of functionalism. One widespread solution was white cubes without plastic individual elements. Another was strips of brick and undulating balconies. Hans Scharoun's initial period of rhythmic plasticity reached its climax here. But Adolf Hitler ended this creative epoch.

Similar developments did not take place in all countries. In Vienna, for example, preference was given to monumental housing developments containing many small apartments and a communal courtyard, with public financing. The façades, decorated with expressive, symbolic elements, became conspicuous signs of practical socialism. The apartment plans – with two or three rooms and no corridor – were not the prime object of design. The infrastructure included libraries, stores, restaurants, laundries, and swimming pools, granting a degree of autonomy to the super-blocks. A salient example here is Karl Marx Hof, built in Heiligenstadt, part of Vienna, in 1928, by the architect Karl Ehn.

An architecturally more modern impression was made by the plans of the apartment buildings of the Werkbundsiedlung in the Neubühl district of Zurich. These plans featured central corridors designed for the upper middle class (36). Between 1919 and 1922 the architect Michiel Brinkman built the exemplary Spangen housing development in Rotterdam, with its open-air galleries. Two one-story apartments, one over the other, are accessed from the ground floor; one has its own ground-floor entrance and the other, its stairway. On the second upper floor are open-air galleries which form a network to interconnect all the buildings and access the maisonettes (37). The routing of this corridor through the buildings enjoys special qualities: sometimes it is completely open, sometimes covered, sometimes single- and sometimes double-depth – but always wide enough for deliveries and for children's playing. The first high-rise apartment buildings were also built here between 1933 and 1938: Bergpolder (by W. van Tijen, Brinkmann, and van der Vlugt), and Plaslaan (by W. van Tijen and H. A. Maaskant) (38).

### 3. Multi-story and low-rise plans during the post-war period 1945-1955

Construction in the extensively destroyed European cities began again very slowly during the first postwar years. Returning soldiers and refugees further aggravated the housing shortage. Reconstruction and the satisfaction of basic needs dominated building programs of these years. Simple three- and four-story rows of apartments with two to four apartments per stairway landing were the result. The developments made in apartment design between the two wars lay fallow: the corridor generally formed the center of the apartment. As a holdover from functionalism, rows of buildings were aligned perpendicularly to streets, not only in outlying urban districts – which allowed the air to circulate through the channel-like open spaces, but also admitted traffic noise. There were no more courtyards. Today, it is difficult to understand how the motto of inner-city planning in Germany – especially during the 1950s – could have possibly been "Density Reduction with Green Throughout."

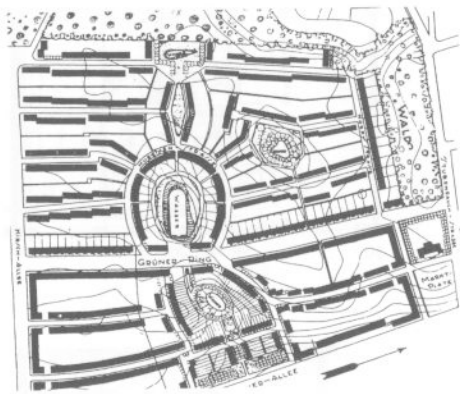
During these first postwar years so devoid of ideas, Le Corbusier built the Unité d'Habitation in Marseilles from 1946 to 1952. The type realized here was originally intended as an urban-design element: with ten units, Le Corbusier wanted to replace an entire city destroyed by the war. In Marseilles during the opening of his building in 1952, on the other hand, he explained as follows: "The intention is to simply replace the city by apartments in a configuration unknown until now. The Unité is planned to offer its residents the same that Marseilles is able to provide its tenants coming from all social classes." His idea was indeed new to fit two-story maisonettes, offset to each other, into his building. Only 7 corridors accessed the 15 apartment and 2 shop floors (39).

With his design, Le Corbusier bestowed yet another fruitful idea for the future, if contained only in an article written elaborating on his Unité: a photograph shows two fingers which insert a two-story apartment mockup into a skeleton model. He thereby anticipated the approach taken up by other architects of the 1970s: the erection of a loadbearing column/floor slab system, into which the finishing elements could be inserted, as elements separate from the supporting structure.

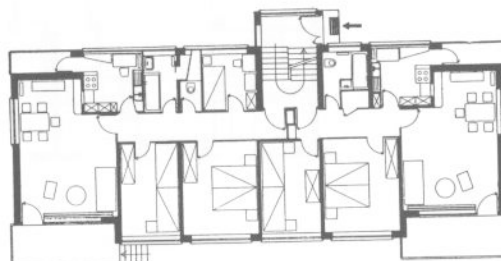
American financial aid through the Economic Cooperative Administration (ECA) enabled construction of the first post-war low-rise housing developments in Germany. In addition to the plan types taken over from the 1920s, there were again attempts in the Stuttgart ECA Housing Development to realize room clusters which were offset by half-stories (40). At the same time, Arne Jacobsen built the Klampenborg housing development in Denmark. The linking of the architecturally appealing angled buildings endows them with intimacy (41).

### 1955-1965

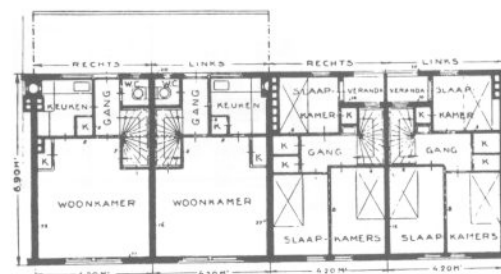
The housing shortage had still not been overcome by this time. The need for fast production of dwellings led to industrial construction techniques. The period of major urban expansion began. Prefabricated and large-panel construction was applied everywhere: initially, in accordance with the constraints dictated by construction-crane runways, and in the form of parallel housing rows. The result was an interchangeable neutrality in



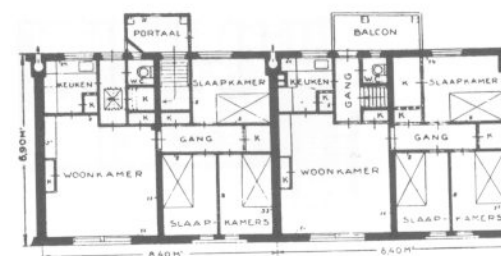
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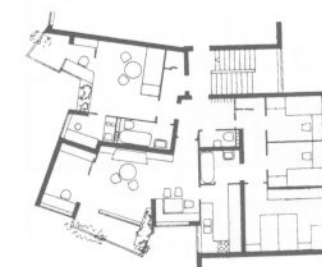
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35 Bruno Taut: Site plan/Lageplan Hufeisensiedlung, Berlin-Britz, 1925-1928

36 Haefeli, Hubacher, Steiger, Moser, Roth, Artaria+Schmidt: Type/Typ LM, Werkbundsiedlung Zürich-Neubühl, 1931

37 Michiel Brinkman: Spangen, Rotterdam, 1919-1922

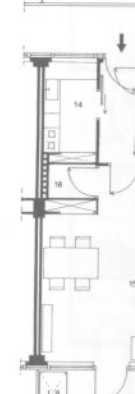
38 W. van Tijen, Brinkmann & van der Vlugt: Residential high-rise/Wohnhochhaus „Bergpolder“, Rotterdam, 1933/34

39 Le Corbusier: Unité d'Habitation, Marseille, 1952

40 Max Hauschild, Gero Karrer: ECA-Development/ECA-Siedlung, Stuttgart

41 Arne Jacobsen: Development/Siedlung Søholm, Klampenborg, Gentofte, Denmark/Dänemark, 1950

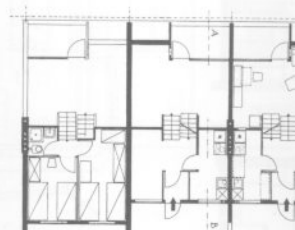
42 Hans Scharoun: Extension of the/Erweiterung der „Ring“-Siedlung, Berlin-Siemensstadt, 1958



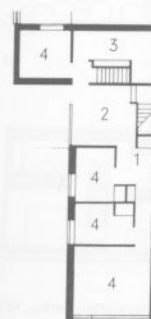
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these housing projects. At the same time, high-rise apartment buildings with 8 to 13 stories were constructed in some cities.

In 1956 Hans Scharoun completed his "Wohngehöfte" (living courts) project, in Siemensstadt in Berlin. These courtyards were not completely closed off: they were open communal spaces protectively bordered by concave-staggered, partially freely formed rows. Scharoun developed the symbiosis type of apartment here: a combination of a four-and-a-half-room apartment with a one-room apartment with its own entrance. The apartments could be joined or separated as desired (42).

Possibly inspired by the Unité in Marseilles, the Interbau housing exhibition was opened in Berlin, in the Hansaviertel in 1957. High-rise apartment buildings were placed in spacious green surroundings; rows were configured fishbone-wise to their streets (43). At respectable distance from each other, the star architects of their period presented their ideas on modern housing: Aalto, van den Broek and Bakema, Eiermann, Gropius, Jae-necke & Samuelson, Ludwig, Niemeyer, Scharoun, Senn, and others. Le Corbusier was able to build another Unité some distance away. Aalto's contribution was especially important in the further development of plan concepts. The common living room formed the center, and the rooms of the individual family members are directly – or almost directly – accessed from this center. The cabin plan underwent further development (see page 26). In Otto Senn's high-rise, he fanned out three different apartment types around a central access space with natural light. Each apartment enjoys orientation to two directions of the compass (44).

Noteworthy low-rise housing developments were built outside Germany during these years. On the outskirts of Bern, Atelier 5 built the extremely dense row-house development called Halen (see page 240). The plans had unit spacing of only 4 m in some cases. Ludwig Mies van der Rohe and Ludwig Hilberseimer designed Lafayette Park in Detroit: a development of steel structures with flexible plans. These included freely inserted sanitary boxes, an idea rediscovered in the 1990s (45). For the Klein Driene project in Hengelo, Netherlands, van den Broek and Bakema designed plans for row houses with mini-mized traffic area, and with upper floors horizontally offset by one axis in some cases (46). The first "carpet development" was built in Karlsruhe, Germany: a one-story construction of semi-atrium buildings with outside access and no vehicle traffic (see page 266).

#### 1965-1975

This period was characterized by major urban expansion and by construction of high-rise apartments and terrace buildings. A young generation of architects rejected the urban-design approaches of Le Corbusier and further developed Hans Scharoun's idea of courtyards on a large scale. Le Corbusier's maisonette plans enjoyed greater appeal among architects than among housing developers. On the other hand, Aalto's cabin plan developed in his Interbau work found considerable further development. Semi-public spaces and access areas, however, were minimized. This general tendency did not apply to Ralf Erskine's Byker Wall in Newcastle-upon-Tyne (begun in 1969). Here, appealing open-air galleries access two maisonettes, one of which is developed upward and the other, downward. The balconies are located between the corridors (47).

Angled-off, staggered, terraced, and rhythmically structured buildings characterized the image of apartment projects during this period. When linked, such solutions allowed the design of space-enclosing buildings which defined large semi-courtyards, creating neighborhoods. A prototype of this kind of urban development on the outskirts of the city was the Märkisches Viertel housing project in 1967 in Berlin (48). Existing housing was respected: single-family-house developments remained and were even expanded. This housing complex demonstrated – in the vertical dimension – a new tendency in urban development: density, i.e., the diametrical opposite of the approach of the 1950s. Large-panel construction was used for only one-fifth of the apartments in the Märkisches Viertel. The practice of row construction came to an end with this project – at least for the time being. The built results of the Märkisches Viertel, from an urban-space point of view, represented a significant advance. Large-scale, sheltering gestures provided by high (perhaps too high) buildings took the place of canal-like interstices between structures. A similar spatial structure had been realized earlier (1957-1961) in Park Hill, Sheffield, England.

Almost at the same time, horizontal density also became a matter of involvement. In 1965 Roland Rainer began his extremely dense housing development: Puchenu, near Linz, Austria. By virtue of using four-story apartment types with vertical-access configurations – which descended to one-story houses on the Danube – Rainer achieved a design which successfully harmonizes with the flow of the landscape, and which produced a formal and social mix (49). In England, Peter Phippen realized an atrium-house development with a great variety in the floor plans (see page 264).

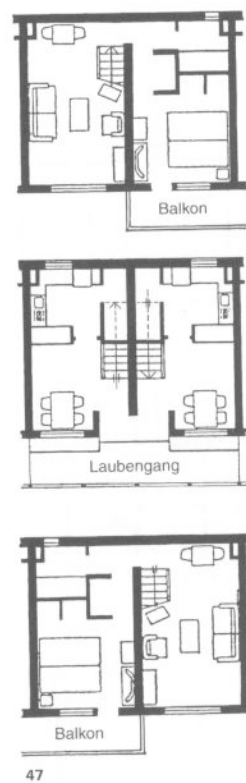
During this period, architects once again pursued Le Corbusier's and van der Rohe's concept of separating the supporting structure from the finishing elements. "Shelf houses" resulted, which the apartment residents had a say in completing. This conformed to the efforts of architects to incorporate sociological insights into the design of apartment plans and housing developments. In a type of social consulting, architects developed their apartment plans in discussions together with the future tenants (50).

#### 1975-1985

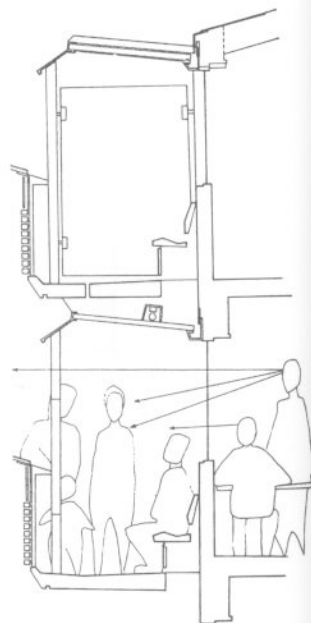
Urban expansion was interrupted in favor of urban renewal. At the same time, labor costs in the prefabricated-component industry rose to such an extent that conventional construction again became competitive. The oil crisis of 1974 furthermore provided incentives for exploitation of natural energy from solar and geothermal sources. The



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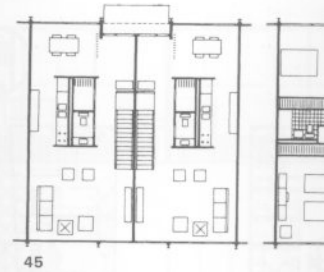
- 43 Site plan/Lageplan Interbau, Hansaviertel, Berlin, 1957
- 44 Otto Senn: Free-standing house/Punkthaus, Interbau, Hansaviertel, Berlin, 1957
- 45 Mies van der Rohe, Ludwig Hilberseimer: Lafayette Park, Detroit, 1955-1963
- 46 J. H. van den Broek + J. B. Bakema + Stokla: „Klein Driene“, Hengelo, Netherlands/Niederlande, 1957-1959
- 47 Ralph Erskine: "Byker Wall", Newcastle-upon-Tyne, 1969-1981
- 48 W. Düttmann, H. C. Müller, G. Heinrichs: Site plan/Lageplan Märkisches Viertel, Berlin, 1971
- 49 Roland Rainer: Row house/Reihenhaus, Puchenu, 1965-1969



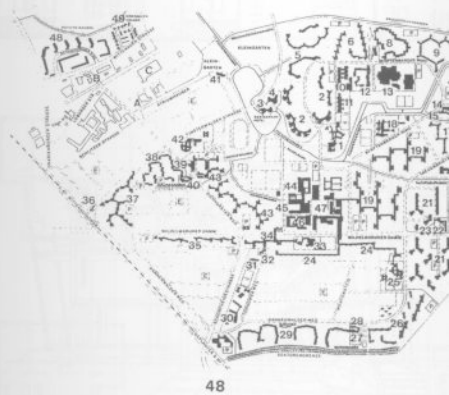
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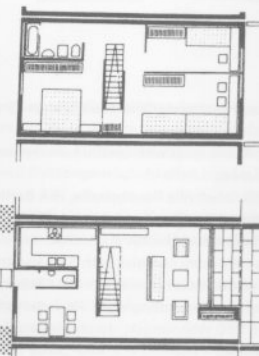
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combination of brick and overall thermal insulation became the preference for exterior-wall construction. Verandas and wintergardens enjoyed popularity as climate controllers. With influence from postmodernism, façade design attained new importance.

The main task during these years was to fill gaps between buildings left by the war – which left less leeway for schematic conception of apartment plans owing to the strict constraints imposed by the surroundings. The same applied to the floor-plan orientation and building depth which played such important roles earlier. A new tendency in plan structuring became the emphasis on a spatial center: whether the living room, or an expanded corridor (51). The combination of stairway with external or internal galleries gained predominance.

The "Internationale Bauausstellung" (IBA) conducted in Berlin before and after 1984 served as a model for these new trends. Both careful modernization (rebuilding and restoration) and radical measures (demolition and new construction) took place in conjunction with the IBA. The emphasis on the image of the new buildings was intended to enable identification of the tenants with their apartments. As a side effect, designers hoped to compete with the newly restored façades originating from the beginning of the century. Difficulties of organizational and financial nature arose in such restoration efforts: most of the tenants had to be temporarily lodged elsewhere during the work. This was one of the incentives for new construction of housing developments on the outskirts of Berlin, in which both block-defining as well as courtyard-defining structures were realized, in addition to rows and the new urban villa type. This latter type, with its manageable, moderate-scale façade sizes and number of tenants, satisfies the desire for smaller dimensions after years of oversizing (52). High-rise apartment buildings gradually disappeared from construction programs.

During this period, the row house – through widening of unit spacing, as well as greater variety in types – became popularly accepted among the middle class. Cross-shaped plans – often interspersed by one or two courtyards, or shifted over each other with Aalto's Sunila project in mind – characterize an epoch in which people were prepared to spend more money than in the previous generation. A number of low-rise communal-type housing models were realized during this period: dwellings occupied by several families who wish to live under one roof.

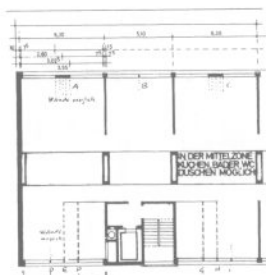
#### 1985-1995

By now, gaps left by the war have been filled and urban renewal programs are practically complete. First priority has shifted to improving housing developments built between wars or after the last war. Measures range from infrastructural enhancement to thermal insulation. The attempt is made to combine small apartments built during the 1930s. And housing projects are again being built on the outskirts of the city. Multi-story apartment buildings now attain only moderate heights. Integration into existing structures, as well as their extension, have become important. Postmodernism has made its exit; the façade has been expediently designed, and is generally no longer as important as the structuring of the floor plan. Cost-effective repetition of elements has been revived: in urban design, linear configurations have become dominant, and in apartment plans successions of use-neutral rooms now prevail (53, 54, 55). Flexibility has become an essential factor in apartment plans, since it has become increasingly difficult to predict the type of future tenants. It has proved more cost- and time-effective to allow future residents to arrange their own rooms as they wish, than to incorporate them into the planning process. In any case, flexibility has come to be seen as an enrichment of living quality. Sliding walls are a chief means to this end. The ability to combine apartments (variability), and the provision of intermediate rooms free to be assigned to one apartment or the other, have become a major factor: in this manner, communal living arrangements can become reality. The central-corridor floor plans – from the turn of the century – have likewise become popular among young people, since they have traditionally allowed independent access to use-neutral rooms. Mies van der Rohe's idea of a box to be freely inserted into a room – to provide a bathroom or kitchen – has once again become a design element.

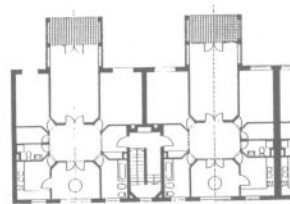
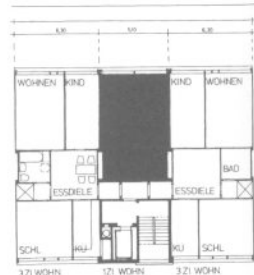
A new need is now the possibility of combining living and professional work areas. The corridor-type plan has also presented itself here as a solution. This development has proceeded to the extent that consideration is now being taken of constructing flexible buildings in metropolitan areas which can be finished as either office or residential space (56). The benefits of single-family houses have also been applied to multi-story apartment buildings. It has become widespread to design rows of blocks with two or three single- and double-story apartments, one above the other, with separate access via open-air galleries. And it is not rare now to find realization of stairwells and communal zones which promote communication among tenants (57).

In row-house developments, plan types are now being duplicated in long lines, without variation. The introduction of the computer into architects' offices has evidently led to the production of purely effective design results.

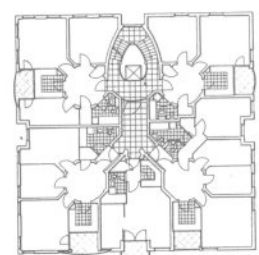
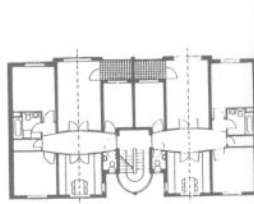
Reinhard Gieselmann



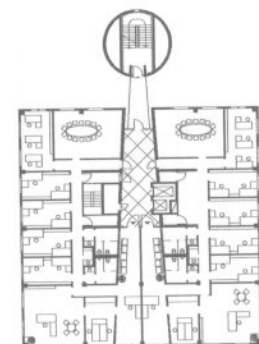
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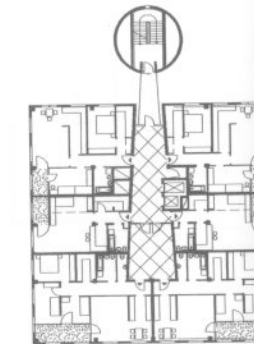
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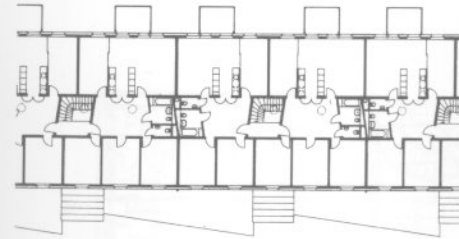
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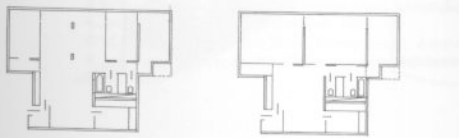
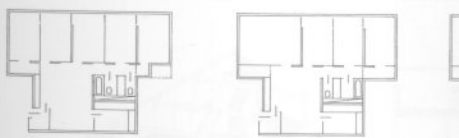
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50 R. Spille: Participatory floor plans/Mitbestimmungs-Grundrisse, Hamburg-Steilshoop, 1975

51 Hilmer und Sattler: Apartments with central hallway, variations/Wohnungen mit zentraler Diele, Varianten

52 Rob Krier: Urban villa/Stadtvilla Rauchstraße, IBA Berlin, 1984

53 Metron Architekturbüro: Housing development/Siedlung Riehen, Basel, 1994, (section of plan/Grundrissausschnitt)

54 ACTAR Arquitectura: Housing complex with 350 apartments; by changing the position of the three prefabricated linear elements – the kitchen, the bath, two built-in wardrobes functioning as separating walls – a variety of apartment layouts is possible Wohnbebauung mit 350 Wohnungen; durch die verschiedene Platzierung der drei vorgefertigten Elemente – Küchenzeile, Bad-„Zeile“, Einbauschränke als Raumteiler – entstehen verschiedenste Wohnungsgrundrisse; Son Gibert, Palma de Mallorca, 1997

55 Njiric+Njiric: Apartment block with fixed kitchen/bath core and rooms allowing for a wide variety of layouts and uses/Mehrfach-Küchen-/Bad-Kern und variablen, nutzungsneutralen Zimmern Vielfalt an Aufteilungs- und Nutzungsmöglichkeiten zulässt; Zürich, 1997

56 Nalbach Architekten: Concept for using one building structure for housing/Konzept zur flexiblen Nutzung eines Gebäudes als B-Wohnhaus, 1996

57 Manfred Kovatsch: A communal hall embracing two residential buildings/verbundene Halle, Tyroltgasse, Graz, 1994

## The Layout of the Apartment/The Floor Plan Idea

The idea behind a floor plan represents the interpretation of a certain notion of living. The floor plan idea expresses itself in the housing unit's internal organization, whose possibilities and limitations derive from the opening and closing of spaces, their connections and groupings, the connection or isolation of functions, from the paths and the views. Some floor plans subordinate everything to the experience of space (see „the inserted box“), while others emphasize the link between the spaces, optimize or celebrate the passage from one room to another („the organic floor plan“ and „the floor plan with circuit“). A floor plan may also thematize the apartment as a „space of social interactions“, with spaces that run the gamut from the communicative to the individual and with floor plans structured correspondingly. The result can be an optimally balanced mixture („the clustering floor plan“) or a type in which privacy has priority („the corridor floor plan“) or even a floor plan in which the communicative side of life is dominant („the centered living room“). These social interactions naturally influence every floor plan organization. Since they cannot be assumed as constant, however, new attempts are always being made to render floor plans modifiable or expandable („the flexible floor plan“).

The following set of categories is an instrument that can simplify the evaluation and the design of floor plans – although, as should be added, the „pure type“ should never be confused with the best one. After all, the truly exciting solutions often lie on the line between two or more of these categories.

### The Corridor Type

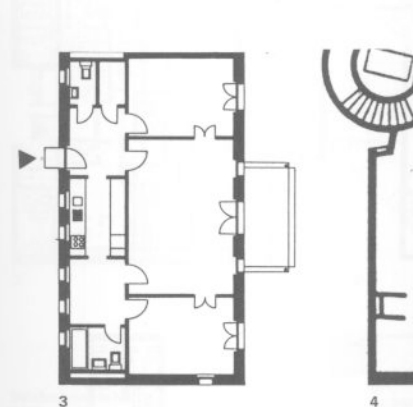
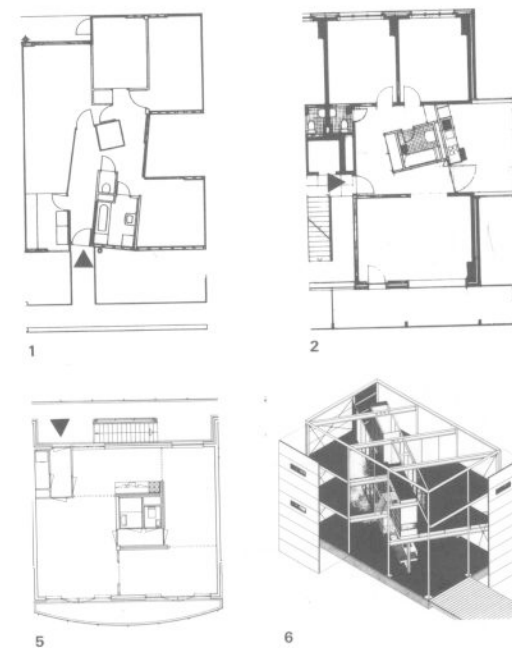
The apartment is organized according to an axis along which the rooms are lined up on one or both sides. In a unilateral arrangement, as in example 1, this produces a pleasant clarity. Example 2, where the rooms open up on both sides at various points, draws the visitor in and stimulates him to wander through the rooms. The apartment can be entered either in the axis or orthogonally (examples 3, 4). In both cases the layout of the apartment is perceived immediately. Especially important here is the endpoint of the axis (or axes), which, in the best case, is the living room (example 1); otherwise it is often the kitchen, sometimes the bathroom. If the hallway is long, narrow, and receives no natural light – i.e., if it is essentially nothing more than an access corridor – the resulting impression will be of an office hall. As a counter-measure, example 4 additionally links the individual rooms on the living-room side by means of a shared wintergarden.

### The Inserted Box

The apartment is visually interpreted as a large, open space with an inserted cube (or inserted walls). Since the viewer's spatial sense relates more readily to the larger space than to the inserted structures, these apartments appear much larger and more open than their actual dimensions would suggest. In order to make the box (with kitchen, bath, or closet) perceptible as an inserted geometric volume, it is often rotated out of its axis, thus presenting one of its edges to the viewer. The box divides up paths or allows circumambulation. A closet, bath, or installation core can separate the living-room and bedroom hallways (examples 1 and 2) or the living room from the sleeping tract (example 3). A core with open kitchen can produce a link between living room and dining area (example 4). In one rare case the box also contains a room (Nouvel, „Nemausus“, Nîmes, penthouse apartment with skylight). Example 5 contains no walls at all, only specifies possible wall placements around an installation core and can be used as a one-room apartment (loft). The duplex (example 6) places a diagonal box inside a rectangular outer one to produce dramatic intermediate spaces.

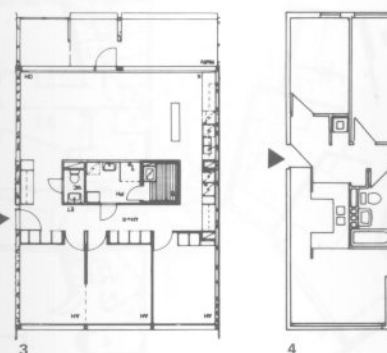
### The Living Room as Centerpoint

The floor plan develops around the living room; it is at once the center and distributor, and almost all paths lead through it. Area is added to the living room because of the associated reduction in hallway space, and even the individual rooms can be reduced for its benefit. This design is exceptionally communicative, but it does restrict opportunities for privacy. The approach may have its origin in the spatial organization of old monasteries with their halls and cells. Hilberseimer refers to this type of design as a „booth system“. Alvar Aalto, in contrast, described his all-encompassing living room as a „marketplace“. The apartment thus has a clearly defined center, while the rest of the rooms remain neutral in terms of function and design (examples 1, 2, 3). The living room can also be defined as a large entry, its outline determined by the position of the adjacent rooms (example 4). The paths through the living room must have been thought out in such a way that they do not impair living quality (example 5). Sometimes (as in the roomy example 1) the bedrooms and baths have additional hallways including baths. There is, of course, no need to place the living room in the geometrical center of the apartment (example 6).



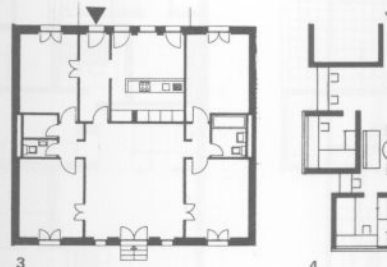
### Flurtyp

- 1 J. Martorell, O. Bohigas, D. Mackay: Villa Olimpica
- 2 Eric Lyons: The Priory Blackheath, London, 1957
- 3 D. Schnebli, T. Ammann/W. Egli, H. Rohr: Baar, Zü
- 4 Hans Kollhoff: Luisenplatz, Berlin, 1983–87



### Box

- 1 Helmut Richter: Brunnerstrasse, Vienna/Wien, 19
- 2 Diener & Diener: Riehenring, Basle/Basel, 1980–
- 3 Erkki Kairamo: Asunto-Oy Hiirankari, Espoo, F
- 4 Atelier 5: Urtenen, Switzerland, 1964–65
- 5 M. Duinker, M. van der Torre: Dapperbuurt, Amst
- 6 Jan Pesman (Cepezed): Straat van Ormoes, Delf



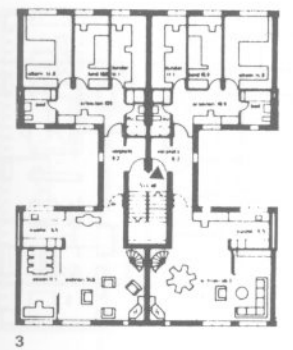
### Wohnraum als Verteiler

- 1 Joachim Ganz, Walter Rolles: Lindenstrasse, Berl
- 2 Anton Schweighofer: Muthsamgasse, Vienna/Wi
- 3 D. Schnebli, T. Ammann/W. Egli, H. Rohr: Baar, Zü
- 4 O. M. Ungers: Project Köln-Neue Stadt, 1962
- 5 Alvar Aalto, Paul Baumgarten: Klopstockstrasse, F
- 6 Ekholm, White, Alm, Falk: Mäander-Siedlung/me



### The Separation of Functional Areas / „Clustering Floor Plan“

The floor plan clearly separates the different functional areas inside an apartment: the living area with living room, kitchen, dining area; and the sleeping area with individual bedrooms and bath (example 1). Hobby rooms or workrooms can form a third area of their own. The aim here is to enable smooth implementation of the individual functions, simultaneously and adjacently; the individual member of the family/apartment community should receive as much freedom and privacy as possible. Each area has its own hallway, and the hallways are either combined at the entrance or arranged in sequence. In the first case a bath core (to be entered from both areas) can separate the areas (example 2) or a kitchen. In the case of buildings with small courtyards, the spatial division can be handled simply by arranging the two areas orthogonally. The access leads into the hallway which connects the two groups of rooms (example 3). However, the living area can also provide indirect access to the sleeping area by letting the living-room hallway run into the bedroom hallway (example 4). In a crosswall construction each area is often allocated to a bay, with a central transverse link. Living and sleeping areas can also be separated by changing the direction of the hallway. In order to create privacy even in the case of a direct connection between living room and sleeping area, a second path to the rooms is often provided; this path can lead through the kitchen or even through the bath (example 5). Since the bedroom hallway can only be used by one part of the traffic, it can also be expanded into a play or work corridor. Zoning in maisonettes is horizontal. Here the entrance usually lies on the level of the living area, more rarely on that of the individual area. The separation of areas is more definite here. Galleries over the dining area or living room help to establish a relationship between the levels and to promote communication. Maximum privacy is created in the exceptional form of the cross-shaped floor plan (example 6), where the different rooms are even separated from each other spatially on the individual levels.

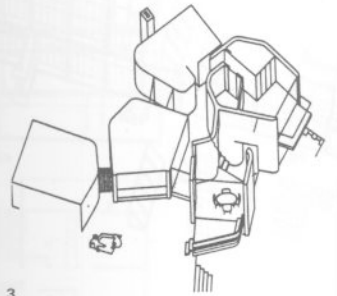
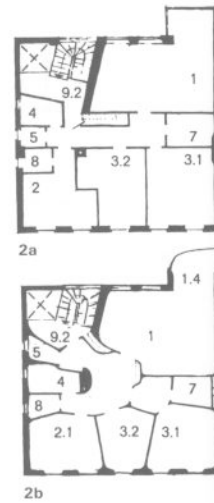


### Wohnbereiche

- 1 O. M. Ungers: Wilhelmsruher Damm, Berlin, 1967–1968
- 2 Otto Jäger und Werner Müller: „Hannibal“, Stuttgart, 1979–1980
- 3 Theo Hotz: Buchgrindel 2, Wetzikon, Zürich, 1979–1980
- 4 Carlos Ferrater: Villa Olimpica, Barcelona, 1991
- 5 Johannes Uhl: Wilhelmshavener Straße, Berlin, 1978–1979
- 6 Francesca Sartogo, Arnaldo Bruschi: Capo Linaro, Sardegna, 1991

### The „Organic“ Floor Plan

This floor plan type is based on a study of the paths of residents during different activities inside the apartment. Walls are set up around the areas where movements are concentrated, and the spaces are developed accordingly (example 1). The paths should be short, the pure hallway area minimal, and the spaces can flow into each other. Right angles are only one of the possibilities here. The floor plans do appear organic, and often the walls seem to move away from a central, spacious hallway (play zone) as if from an origin (example 2). This floor plan emphasizes the functional relationships between the rooms and takes into account the individual spatial sequences: for example, the relationship between kitchen and play area, kitchen and entrance, parents' bedroom and nursery (example 3). The spaces thus created have unusual forms; however, for standard furniture they generally admit only one furnishing option – that envisioned by the architect. Since the patterns of movement (and thus the desired spatial relationships) that determine our lives are constantly changing, these floor plans „age“ quickly; they are so „perfect“ and special that they prove to be inflexible.

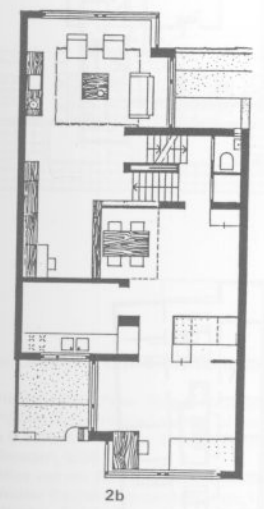
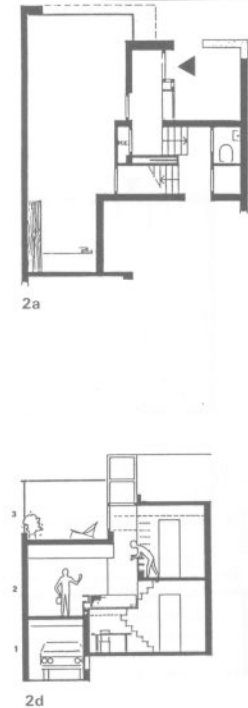
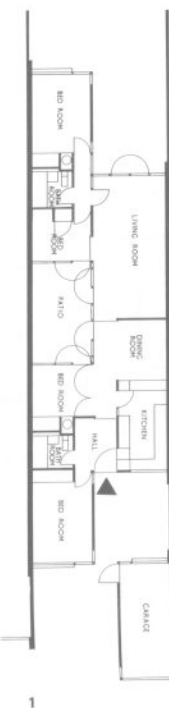


### Der „organische“ Grundriß

- 1 Hans Scharoun: „Julia“, Stuttgart, 1954–1959
- 2 a b Heinz Rasch: Umbau/Conversion
- 3 Walter und Bea Betz: House Schäfer, Würzburg, 1966

### The Flowing Floor Plan

The flowing floor plan can be understood as a variant of the organic floor plan. It is characterized not by a particular position of the walls but by their omission. The rooms are rarely separated from the circulation area and they are only slightly separated from each other: they flow into each other, offer visual references, invite the visitor to move onward. The apartments thus appear much larger and more open, the individual room always remains related to the whole. In example 1 (horizontal intertwining), living room, dining area, and kitchen blend with the bedroom hallways of the parents' and childrens' rooms; the rooms are staggered in respect to each other and to the path axis. Vertical intertwining, on the other hand, leads to varied room heights and spatial relationships that increase the enjoyment of passing through (example 2). The flow of rooms is sometimes supported by the use of light; a light source, placed at the end of the path, is approached by the visitor. In example 1 it is the glass door to the garden across from the entrance, in example 2 the skylight whose column of light becomes the center of the building. The split-level type works more with visual relationships than with immediate proximity, so that the individual room remains largely undisturbed. The disadvantages of this conception, which have to do with the virtual impossibility of separating the individual from general events, are thus eliminated.



### Der „fließende“ Grundriß

- 1 P. Phippen: Hatfield, London, 1964
- 2 a b c d Herman Hertzberger: Diagon Houses, Delft, 1974

### Floor Plan with Circuit

A floor plan of this type thematizes pathways through the apartment (less than the flow of space); it creates the largest possible number of functional and spatial relationships between the various rooms that can be experienced and lived in. Unlike the previous approach, the connection only exists between one place and the next. When the apartment is wrapped around an atrium (examples 1, 2), however, visual references to the opposite side are created. If access to the rooms is provided by an extra corridor (examples 2 and 3), the rooms may have the effect of display compartments alongside a visitors' circuit. Since this increases the circulation area to an unusual extent, however, it always remains a luxury for single-family houses. Every place, every room can be reached by two (or more) paths in a floor plan of this type if the living room occupies the center (example 4). In example 5 the individual rooms are all arranged so that the breakthroughs in the center of the partitions enable "circulation in the round". This is done, however, at the cost of space for furniture, and one can assume that these openings are opened and closed to the extent required by the family situation at any given time. A floor plan with circuit can also transform the sanitary area into the center (example 6), or the stairwell itself can lie in the center of the apartment (example 7). Here, though, there is the danger that the rooms will become atomized or isolated, as in the case of the hallway type.

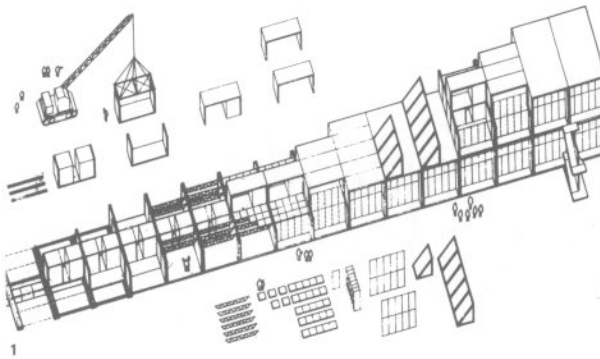


### The „Flexible“ Floor Plan / Neutral-Function Space

The constantly changing family situation (size, composition) and the increasing differentiation of housing needs are contradicted by the need for rationalization and standardization in the mass construction of housing. The favored solution should be conversion within the existing floor plan rather than a move to another apartment. The approaches here range from modifiable external walls, modifiable internal walls within fixed outer walls, and rooms that can be assigned to different apartments, all the way to changing the form and size of the rooms by means of movable wall sections. Most radical of all is undoubtedly the idea of the „growing house“ (as single-family house, example 1), in which gradual expansion carried out by the residents is designed to increase their identification with their own home. In example 1 as in most of the solutions, the core of the building, from which it is developed horizontally and vertically, consists of an installation and access core that simultaneously assumes structural functions. Example 2 is an early example of a (horizontally) modifiable external envelope for use in the construction of flats: the individual floor plan can be constructed on a platform with light walls inside a concrete skeleton. Example 3 also uses a column system, fixing the load-bearing outer walls and the installation areas; residents can fulfill their individual floor plan desires with special removable inner walls. The shallowness of the built volume creates good lighting conditions. Example 4 is a model structure that places the installations in a single axis along the apartment partitions and leaves the rest undetermined.

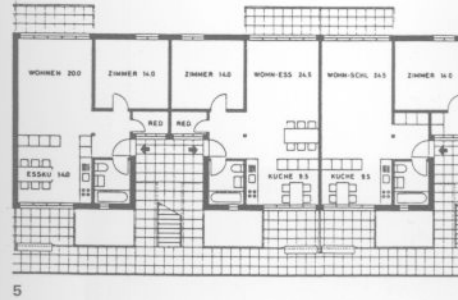
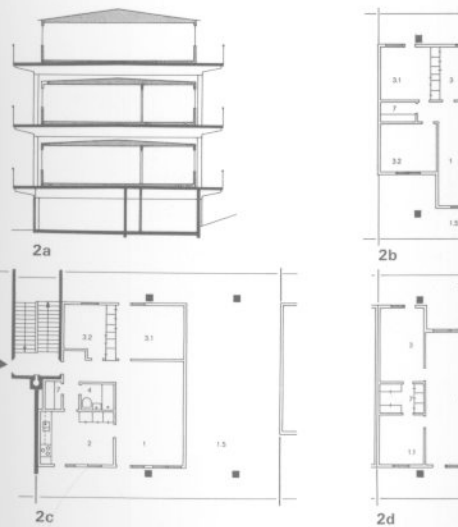
The attempt to solve housing problems with flexible floor plans met with little success. The problem of noise protection remained unsolved, the costs of suspended ceilings (flexible power and lighting supply paths) as well as, in some cases, of floor heating systems, etc., could not justify the advantages of a flexible floor plan design. Practice shows that most residents later tend to shy away from the expense of repositioning a wall and prefer participatory planning instead. Buildings and housing types are still experienced as something static in which one settles and to which one adapts. Today flexibility is thus restricted to apartment size: rooms of neutral character can be assigned to different apartments or several apartments can be combined (example 5). Room sizes and forms can be changed to a limited extent by means of movable inserts. Another strategy allows uses to be exchanged within the apartment by incorporating neutral spaces that nonetheless require a certain size and proportion and that must be capable of independent access (example 6). Apartments in nineteenth-century buildings often offer the modern resident a greater degree of flexibility than many cleverly thought-out modern floor plans.

Friederike Schneider



### Grundriß mit Rundgang

- 1 Alison and Peter Smithson: House of the Future, Ideal Home 1956
- 2 Barry Gasson, John Meunier: Barton, Cambridge, 1965
- 3 Huygens, Tappe: Wayland, Massachusetts, 1965
- 4 Diener & Diener: Hammerstrasse, Basle/Basel, 1978-81
- 5 O. M. Ungers: Garthestrass 8, Köln-Riehl, 1957
- 6 „Syndicat des Architectes de la Seine“: System einer veränderlichen aufteilung/System of flexible flat layout, Paris, 1960
- 7 Rem Suzuki: „cruciformes“, Paris, 1967



### Der „flexible“ Grundriß / funktionsneutrale Räume

- 1 Renzo Piano, Peter Rice: Industrialisiertes Konstruktionsssystem/Häuser/Industrialized system of construction for growing households
- 2 a b c d Erik Friberger: Experimenthaus/Experimental House, Sweden, 1935
- 3 Mies van der Rohe: Weißenhofsiedlung, Stuttgart, 1927
- 4 Walter Fischer: Bramshof, Zürich, 1989-1991
- 5 Werner Kohn: Bauwettbewerb „Flexible Grundrisse/Com layouts“, Geislingen-Auchtweide, Germany, 1976
- 6 Diener & Diener: St.-Alban-Tal, Basle/Basel, 1986